

DOCUMENT RESUME

ED 237 480

SP 023 304

AUTHOR Mayhew, Harry C.
TITLE Related Research on Class Size.
PUB DATE 83
NOTE 27p.
PUB TYPE Information Analyses (070)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Academic Achievement; Classroom Research; *Classroom
Techniques; *Class Size; Elementary Secondary
Education; *Student Teacher Ratio; Teacher Attitudes;
*Teacher Effectiveness

ABSTRACT

A bibliographic study was made of current research on class size, providing an historical overview of selected class size studies and a review of conclusions applicable to class size. A central theme which runs through the literature concerning class size reduction is that academic achievement does not necessarily improve when student-faculty ratios are reduced, unless appropriate learning styles and effective teaching styles are utilized. It is evident that no single class size is best for all levels of education and all subjects. A number of factors must be considered, such as subject taught and grade level, when considering the best class size. The literature indicates the need for additional study on class size related to the myriad variables which affect the best class size, particularly studies conducted over a long period of time. (JD)

* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *

ED237480

RELATED RESEARCH ON CLASS SIZE

A PAPER PREPARED BY
DR. HARRY C. MAYHEW
ASSOCIATE PROFESSOR OF EDUCATION

MOREHEAD STATE UNIVERSITY
MOREHEAD, KENTUCKY 40351
FALL, 1983

"PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY

Harry C. Mayhew

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

This document has been reproduced as
received from the person or organization
originating it.

Minor changes have been made to improve
reproduction quality.

Points of view or opinions stated in this docu-
ment do not necessarily represent official NIE
position or policy.

RELATED RESEARCH ON CLASS SIZE .

It was the purpose of this study to: (1) Report current research on class size, (2) Conduct an historical overview of selected class size studies, and (3) Review conclusions applicable to class size from the literature.

I. CURRENT RESEARCH ON CLASS SIZE

Average class size has been studied a great deal in an attempt to determine what influence it has on teachers and the education of children. Recent research on class size in modifying the significance of past studies. There are several hundred known articles and investigations related to the question of class size. Particular interest is now evident in studies related to pupil-teacher ratios and its effect upon academic achievement. Some studies emphasize other variables such as teacher job satisfaction; pupil motivation; attitude, skill, and motor ability; emotional and social dependency of the student on the teacher; and readiness and ability of the learner to assimilate undiluted verbal presentation of content.

There are differing opinions concerning which patterns of staffing provides the greatest return in relation to specific educational conditions. Smaller classes it is sometimes assumed, are essential for more effective teaching and learning.

Recent research indicates repeatedly that the relationship between pupil achievement and class size is highly complex and that there "is general consensus that the research findings on the effects of class size on pupil achievement across all grade levels are contradictory and inconclusive."¹ These conclusions by the Educational Research Service apparently remains the position of ERS despite a widely publicized review of class size research published in September, 1978 by Gene V. Glass and Mary Lee Smith.

Glass and Smith proclaimed that "through the use of a new technique they termed 'meta-analysis' they were able to make 'bold generalizations' about the effects of class size on pupil achievement where previous research analysts could offer only timid qualifications."² Glass and Smith developed a graph from an analysis of 14 class size studies conducted by researchers other than themselves. From this analysis the authors feel that their work clearly established that reduced class size can be expected to produce increased academic achievement.³

The graph designed by Glass and Smith illustrates quite a dramatic improvement in academic achievement as class size is reduced below 20 pupils. However, the graph also indicates that

¹"Class Size: A Summary of Research," The Education Digest, December 1978, pp. 68-70.

²Educational Research Service, "Class Size Research: A Critique of Recent Meta-Analysis," The Phi Delta Kappan, December 1980, p. 239.

³Ibid.

class size makes little difference in the range of 20 to 40 pupils. The Phi Delta Kappan reported in February 1979 that the Glass and Smith study "is the first by a nationally recognized researcher to make unequivocal statements about the effects of class size on pupil achievement" and that "it has enormous policy implications."⁴

In the Education Research Service research brief published in 1978, the ERS stated that research on class size suggests the importance of an emphasis "on the methods and quality of instruction in the classroom rather than on the number of pupils in the classroom."⁵ In that report the ERS also noted that "there is considerable and consistent research evidence that certain teaching procedures and practices perceived by some educators as conducive to a productive learning environment (e.g., more individualization, creativity group activity, and interpersonal regard) occur more frequently in smaller classes than in larger classes."⁶ But the ERS pointed out in that brief that "not enough research has been done to validate the presumed superiority of these activities in terms of pupil achievement."⁷

⁴ Ibid.

⁵ "Class Size: A Summary of Research," Op. Cit.

⁶ Ibid.

⁷ Ibid.

It is noteworthy that the position taken by the ERS in their research was that "Research to date provides no support for the concept of an 'optimum' class size in isolation from other factors."⁸ Efficient class sizes are a product of many variables, the ERS states, including the subject area, nature and number of pupils in the classroom, nature of learning objectives, availability of materials and also of facilities, instructional methods and procedures used, skills and temperament of the teacher and support staff, and budgetary constraints.⁹

Does the meta-analysis of Glass and Smith indicate a combination of variables conducive to effective teaching and learning as the pupil-teacher ratio is reduced below 20? This is an interesting question, but the ERS notes that, in terms of pupil benefits, research findings fail to justify small overall reductions in class size or pupil-teacher ratio by school boards as a matter of policy without definite pupil-benefit objectives for specific groups of pupils.

Frances B. Cacha in his article, "The Class Size and Achievement Controversy" states that many doubts are raised as to the validity of the methods used in the Glass and Smith reports. He concludes:

The class size and achievement issue is far too complex to be dismissed with the simplistic generalization, "as class size increases, achievement decreases," even if it

⁸ Ibid.

⁹ Ibid.

were a valid conclusion. With the goal of finding ways to increase achievement, researchers need to investigate many innovative ways to group students in different curriculum areas for different purposes at various stages of the student's development and, at the same time, to make maximum use of the skills and abilities of the educational staff.¹⁰

The Educational Research Service acknowledges that some research supports the contention that smaller classes can positively affect the scholastic achievement of economically and/or culturally disadvantaged pupils. Over a decade ago, James Doherty, in his article in Childhood Education on "Pupil-Teacher Ratio in Head Start Centers" stated that Head Start, with its ratio of one teacher to fifteen children, proved the assumption valid that the answer to many pre-primary school problems is more teachers working with smaller classes.¹¹ In that same issue of Childhood Education there was an account of a study of Cannon on the effect of class size on kindergarten groups which recorded and described systematically the effects of overcrowding.

The large groups used in this study ranged from 34-39 pupils, with an average enrollment of 38.50. The small groups had 23 to 28 children with an average of 24.75. The results of the study found more aggressive acts in the large group than in the small group. Children in the small group were reported

¹⁰Frances B. Cacha, "The Class Size and Achievement Controversy," Contemporary Education, Vol. 54, No. 1, 1982, p. 16.

¹¹James Doherty, "Pupil-Teacher Ratio in Head Start Centers," Childhood Education, Vol. 43, No. 1, September 1966, p. 7.

to have made friends more easily, responding to the more relaxed atmosphere. The quality of classroom living, as shown by child-teacher contacts, was much higher in the small groups. There was one striking difference observed in block building and play house activities in which greater variety and creativity in the play of the small group were evident.¹²

The teacher in this study kept a diary of her feelings in directing the two groups which disclosed that the large group was often termed hard, noisy, chaotic, with the teacher exhausted by the end of the day. The small group was described as affectionate, relaxed, and productive; the children were observed to be more spontaneous, creative, and happy. In all areas studied, the teacher experienced greater satisfaction, more enjoyment, and a higher sense of achievement when working with the smaller groups.¹³

Recent research by ERS indicates that smaller classes appear to have a positive effect on pupil behavior in the elementary grades. In terms of academic achievement the ERS reports that small classes are important to increase academic achievement in reading and mathematics in the early primary grades; that there is some positive relationship between small class size and pupil achievement when primary pupils are taught in small

¹²Gwendolyn Cannon, "Kindergarten Class Size," Childhood Education, Vol. 43, No. 1, September 1966, p. 10.

¹³Ibid., pp. 10-11.

classes for two or more consecutive years; and that pupils with lower academic ability tend to benefit more from smaller classes than do pupils with average ability.¹⁴

"The evidence is that, within the Midrange of about 25-34 pupils, class size seems to have little, if any, decisive impact on the academic achievement of most pupils in most subjects above the primary grades,"¹⁵ according to the 1978 research brief by ERS. The ERS maintained in that report that there is general consensus "that the research findings on the effects of class size on pupil achievement across all grade levels are contradictory and inconclusive."¹⁶

¹⁴"Class Size: A Summary of Research," Op. Cit.

¹⁵Ibid.

¹⁶Ibid.

II. A HISTORICAL REVIEW OF SELECTED CLASS SIZE STUDIES

In a report by the Committee on Class Size of the California Elementary School Administrators' Association in 1959, the listing of known investigations of class size totaled approximately 275 in number. Of these studies it was found that only a relatively small number were considered statistically sound. Therefore, only a few were considered dependable enough to be employed as supporting evidence in determining optimum class size or sizes.¹⁷

In 1954 Howard Blake investigated all the known studies treating class size. His project was undertaken at Teachers College, Columbia University, and 267 class size studies were reviewed and 85 selected on the basis of original data. Levels covered in the selections were public elementary schools, junior high schools, and high schools. Two studies covered all educational levels. The studies were directed toward the effect of class size on pupil achievement, effect upon teachers, effect upon how much teachers know about pupils, and effect upon the opinions of teachers and administrators.

When Blake tested the studies according to his established criteria, 22 of the 85 class size studies were selected.

¹⁷"Reports on Class Size," Childhood Education, Vol. 43, No. 1, September 1966, p. 11.

These were found to be statistically sound and their findings were considered with confidence.¹⁸

When analyzed quantitatively without regard for the exact areas of their investigations, the following findings were reported:

1. Sixteen studies favored small class size (72%),
2. Three studies favored large class size (14%), and
3. Three studies were inconclusive (14%).¹⁹

Harold Richman also conducted a study at Columbia concerning class size. In his research Richman found that small classes lead to the following practices:

1. Increased face-to-face relationships between teacher and pupils,
2. Increased opportunities for children to select learning materials,
3. Increased knowledge by teachers of pupil's individual abilities,
4. Increased knowledge by teachers of pupil potential,
5. Increased teacher attention to informal pupil guidance,
6. Increased teacher attention to observing non-overt pupil behavior denoting emotional instability,
7. Increased work with the gifted and with the slow, and

¹⁸ Ibid.

¹⁹ Ibid.

8. Increased attention to grouping and greater flexibility of grouping.²⁰

However, the article states that evidence for the best size of class for effective education is inconclusive. A section in the 1967-68 report on staffing schools in the Twin Cities Metropolitan Area states:

The likelihood that this answer (for the best teacher-student ratios) will be found in the near future is remote. Until more conclusive research is available class size may be used as a means of viewing one perspective of how school districts allocate their resources to provide professional services to the children within their jurisdiction.²¹

In an article, "Would Cutting Class Size Change Instruction?", Haberman and Larson conducted a study centered around the following problem: "If class size is cut by one-half to two-thirds and if the requirements of a structured, system-wide curriculum are removed, will teachers continue to work with the class of disadvantaged pupils as a total group or will they be more likely to differentiate tasks?"²²

The study included 517 observations in classes of 4-15 pupils, and 389 observations in classes of 22-34 pupils. The

²⁰Ibid.

²¹"Staffing Schools in the Twin Cities Metropolitan Area," A Survey of Staffing Levels in Schools Associated with the Educational Research and Development Council of the Twin Cities Metropolitan Area, 1967-68, p. 7.

²²Martin Haberman and Richard B. Larson, "Would Cutting Class Size Change Instruction?", The National Elementary Principal, Vol. XLVII, No. 4, February, 1968, p. 18.

method for determining results was a comparison of the number of simultaneous activities conducted in regular and small classes. The teachers observed were told in advance that visitors would be entering their classroom for random, brief periods over a two-week span of time. Recordings of observations were made with the following selected symbols, each representing an activity: TX, teacher talking to x number of pupils; PX, pupil talking to x number of pupils; and SX, silent activity, involving x number of pupils.

In the study there were 906 time samplings of over 900 pupils and 79 teachers. While the study lacked complete controls and standardization, the authors were led to some calculated conclusions. The importance of the findings to the investigators was in a great part related with the large percentage of observations which indicated total class activities with the teacher either talking or monitoring silence rather than in the increased percentage of instances of pupil talk in smaller classes.²³

The authors concluded:

We are more skeptical of the assertion that removing curriculum restrictions and cutting classes by one-half to two-thirds will make teachers more responsive to subgroups and individuals. It seems that teachers prefer covering material with total groups to getting involved with individuals.

Would cutting class size change instruction? We doubt it. Teachers just don't differentiate assignments or instructional activities; their

²³Ibid.

role perceptions are probably not a function of class size at all. If smaller classes are to make a difference in the classroom behavior of teachers, it may be that they need to be instructed on how to teach a small class in different ways.²⁴

Head Start Center Ratios

James Doherty, in his article, "Pupil-Teacher Ratio in Head Start Centers," states:

For years educators have theorized that the answer to many pre-primary school problems is more teachers working with smaller classes. Head Start, with its ratio of one teacher to fifteen children, proved this assumption valid. A corollary to the theory is that, when a teacher is relieved of some of the extra work, her effectiveness is greatly enhanced because she has more time for the children.²⁵

Doherty states that sample reports from various parts of the nation give consistent indications that the high adult-child ratio had a tremendous effect on the children's growth. He also reports that of 600 communities polled by Head Start consultants, over 300 had expressed intentions to reduce class size and make other revisions in districts where poor children predominate. The adult-child ratio has been reduced significantly, Doherty says, by utilizing full-time Head Start volunteers, and he reports that most of these schools are planning to include volunteers in their programs.

²⁴ Ibid., p. 19.

²⁵ James Doherty, Op. Cit., p. 7.

Kindergarten Class Size

A study on the effect of class size on kindergarten groups recorded and described systematically the effects of overcrowding. The study concentrated on five areas of inquiry:

1. To discover if kindergarten children express more aggression in a large class than in a small class,
2. To see if children link themselves more successfully with their peers in a large group as compared to a small group,
3. To show the number and quality of child-teacher contacts in a large group as compared to a small group,
4. To compare and evaluate types of activity in which children participate in large and small groups, and
5. To record and compare the expressed feelings of the teacher as she works with a large group as compared to a small group.²⁶

In all areas studied, the teacher experienced greater satisfaction, more enjoyment and a higher sense of achievement when working with the smaller group.²⁷

Class Size and Teacher Satisfaction

A study published in February 1965 by the Peninsula Study Council relates class size to teacher satisfaction. Schools in this study had been successful in reducing class size; the average elementary classroom enrollment fell in the range of 25-29 pupils

²⁶Gwendolyn McConkie Cannon, Op. Cit., p. 10.

²⁷Ibid., p. 10-11.

and the average number met by teachers in departmentalized schools fell in the range 101-125 pupils. The study concluded that evidently these class sizes were acceptable to teachers in the sample and as contrasted with the Cannon kindergarten study no significant correlations between class size and job satisfaction were found.²⁸

Elementary Level

A study of the relationship between class size and pupil achievement on the elementary level was conducted at the Catholic University of America. The purpose of the study was to gain some insight into the possible relationship between class size and pupil achievement. The first part of the study consisted of an investigation of the history of class size in the United States and particularly in Catholic schools. It was seen that the size of classes has varied tremendously in the past 300 years although from the advent of the graded classroom in the last half on the 19th century, the range of class sizes has been more or less constant.²⁹

The author of that study investigated research done in the area of class size and achievement at the elementary school level. He states that no general conclusions can be drawn from past research. Past research, he says, merely shows that

²⁸Job Satisfaction and Teacher Characteristics, Peninsula Study Council, Stanford University, February, 1965, p. 27.

²⁹Daniel J. Menniti, "A Study of the Relationship Between Class Size and Pupil Achievement in the Catholic Elementary School," Dissertation Abstracts, XXV, 1965, p. 2854.

there is no one simple answer to the class size-achievement question, but that the answer depends on grade level of the pupils, subject area, I.Q., teacher ability and other variables.

A third part of the project was a statistical study of the relationship between class size and pupil achievement in the Catholic school eighth grade. From the statistical analysis and comparison of the results, it was concluded that there was a significant difference in achievement in mathematics in large classes for the average pupils of both dioceses studied. Significant differences in the reading achievement of the average pupils were also found in the large classes studied at Harrisburg. In general, the achievement of the low I.Q. groups studied was affected in the same areas but not so much as the average pupils studied. The achievement of the upper I.Q. groups showed no significant differences in large classes.³⁰

Class Size and Achievement in Junior High School

A study by Mauritz Johnson of Cornell University and Eldon Scriven of Northern Illinois University was made on "Class Size and Achievement Gains in Seventh- and Eighth-Grade English and Mathematics." An examination of the achievement gains made by some 7,500 seventh- and eighth-grade pupils in 265 English and mathematics classes revealed no consistent effect of class size on the gains.³¹

³⁰ Ibid.

³¹ Mauritz Johnson and Eldon Scriven "Class Size and Achievement Gains in Seventh and Eighth-Grade English and Mathematics," The School Review, Vol. 75, No. 3, Autumn, 1967, p. 300.

The researchers point out that essentially the same data were used in this study as in Millman and Johnson's in which no consistent relation is revealed between class variability and achievement gains. The authors also note that the results of this study apparently accord with recent findings in Sweden in which it was contended that Parliament should "increase in educational productivity" of the country by "a successive reduction in class size." The results of the Swedish study was reported to "make it quite clear that within the range under consideration where was no evidence to support such a prediction."³²

Class Size and Achievement and Motivation in High School

An Exploratory investigation on the effects of class size and scheduling related to achievement and motivational outcome has been conducted at Michigan State University. The problem in this investigation was to examine the effects of different class sizes and scheduling on the educational development of students in high school physics, chemistry, and senior English. Educational development outcomes for the study were measured in (1) Subject matter and skill achievement and (2) Motivation.³³

³² Ibid.

³³ C.M. Williams, "An Exploratory Investigation of the Effects of Class Size and Scheduling Related to Achievement and Motivational Outcomes," Dissertation Abstracts, XXIV, 1964, p. 637.

In the experimental school of the study, the class sizes ranged from approximately 60 to 100 students, meeting twice a week in double periods interspersed with one small class (6-24 students) and laboratory periods for each student. In the control school, class size was standard of approximately 30 students and scheduled five times a week for 50 minute periods with necessary and appropriate laboratory periods for the subjects.

The major conclusion of this investigation was that class size, as a variable, affects the teaching and learning situation. It was impossible, the researcher reported, to separate sufficiently the full effects of class size on instruction and learning and motivational outcomes.³⁴

Class Size and Dependency at Various Levels

Dorothy H. Cohen³⁵ in "Dependency and Class Size" states that the dramatic extremes of the graduate school and the nursery school point up the behavioral differences that make the class size in each case suitable to a teaching-learning style appropriate for the students. She lists three different student needs: (1) Emotional-social dependency of the learner on the teacher, (2) Cognitive dependency on the teacher, and (3) Readiness and ability of the learner to assimilate undiluted verbal presentation of content.

³⁴ Ibid.

³⁵ Dorothy H. Cohen, "Dependency and Class Size," Childhood Education, Vol. 43, No. 1, September, 1966, p. 17.

Cohen points out that the first need--emotional social--is greatest in early childhood, and exists in diminishing strength throughout the elementary and high school years. Surprisingly it still appears in mild form as late as the first two years of college. She concludes that successful fulfillment at different stages in a learner's life may call for one class size rather than another.

The second need--cognitive dependency on the teacher--is one in which Cohen says the age and experience of the learner are usually of vital importance in setting a class size. The younger and less experienced the learner, the more diverse and variegated is the dependency on the knowledgeable adult for information and techniques, she states.

Cohen feels the last facet considered--readiness and ability of the learner to assimilate undiluted verbal presentation of content--is of great importance. She feels this is because there is a physical limit to the energy, psychic as well as physical, that a teacher has available to dispense. She concludes that class size must be so determined that each individual can receive from the teacher that share of emotional and cognitive attention which is a necessary ingredient of his growth as an independent, fully responsible learner who will in time become his own teacher.³⁶

³⁶Ibid.

III. CONCLUSIONS FROM THE LITERATURE APPLICABLE TO CLASS SIZE

Merle E. Landerholm found that a group of school systems receiving the highest scores on a measure of school system adaptability had an average numerical staffing adequacy of 68 professional staff members per 1,000 pupil units, that class size in their secondary schools averaged 22.³⁷

An article, "Teachers and Principals Agree on Best Class Size", states that although research on the best size of class for effective teaching may be inconclusive, the majority of both elementary school teachers and principals agree that a class of 20-24 pupils is the best in size.³⁸

An article in Nation's Schools states that recommended staffing ratios of 50 to 1,000 seem inadequate. The source reports it is remarkable how many school districts have met the staff ratio of 50 to 1,000 pupils recommended by Paul Mort. It further states that this ratio is probably inadequate, especially for the social and educational problems of assisting children in our central cities.³⁹

³⁷ Bernard H. McKenna, "Patterns of Staff Deployment Related to School Quality," IAR Research Bulletin, Vol. 1, No. 3, April, 1964, p. 1.

³⁸ "Teachers and Principals Agree on Best Class Size," NEA Research Bulletin, Vol. 39, No. 4, December, 1961, p. 107.

³⁹ "Recommended Staffing Ratios--50 to 1,000--Seems Inadequate," Nation's Schools, Vol. 80, No. 6, December, 1967, p. 47.

Following is the position taken in the article:

In changing the kinds of services offered and in saturating schools with the proper services, we should be thinking of staff-pupil ratios in the vicinity of 100 staff per thousand. In a number of big cities, between 1/3 and 2/3 of the schools should have that level of staffing and we should revise our goals accordingly. It is also clear from the research of Benjamin Bloom and others that the rather low staff ratios in the elementary schools cannot remain as low as they have been. Increasing the amount of staff resources in the early grades will further drive up the total staff ratios for all school systems toward 75 staff members per thousand.⁴⁰

The following quotation from a NEA News release appeared in The Education Digest (December, 1978):

The greatest rewards from smaller classes probably come in those hard-to measure areas of personality and character. The teacher fortunate to have smaller classes can emphasize human values; for example, foster self-acceptance by the child, nourish his creative traits, and aid his social development. This teacher also can try out innovations that may make his teaching more effective. Research has shown that teachers tend to take on innovations in small classes only to drop them if the classes become large.

A summary of more recent research on class size is included in the December 1978 issue of Education Digest which was condensed from Class Size: A Summary of Research, a research brief by Educational Research Service, Inc., Summary and Conclusions, pp. 68-70, in 1978 by Educational Research Services, Inc., Arlington, Virginia.

Some of the salient findings from that study is quoted as follows:

- Research findings on class size to this point document repeatedly that the relationship between pupil achievement and class size is highly complex.

⁴⁰ Ibid.

- There is general consensus that the research findings on the effects of class size on pupil achievement across all grade levels are contradictory and inconclusive.
- Research to date provides no support for the concept of an "optimum" class size in isolation from other factors. Rather, the indicators are that efficient class sizes are a product of many variables including: subject area, nature and number of pupils in the classroom, nature of learning objectives, availability of materials and also of facilities, instructional methods and procedures used, skills and temperament of the teacher and support staff, and budgetary constraints.
- Existing research findings do not support the contention that smaller classes will of themselves result in greater academic achievement gains for pupils. The evidence is that, within the midrange of about 25-34 pupils, class size seems to have little, if any, decisive impact on the academic achievement of most pupils in most subjects above primary grades.
- There is research evidence that small classes are important to increased pupil achievement in reading and mathematics in the early primary grades.
- There is also some evidence of a positive relationship between small class size and pupil achievement when primary grade pupils are taught in small classes for two or more consecutive years.
- There is evidence that pupils with lower academic ability tend to benefit more from smaller classes than do pupils with average ability.
- Some research indicates that smaller classes can positively affect the scholastic achievement of economically or socially disadvantaged pupils.
- Policy decisions pertaining to class size and pupil/teacher ratio involve factors that are complex, varied, and often emotionally charged. These require the weighing of the possible pupil benefits, the possible teacher benefits, the facilities utilized, the financial costs, and the possible political consequences.

The National Education Association wants to contain classroom size. In an article, "Lower Class Size Linked to Quality Schooling, SNEA's Solutions to Curriculum Concerns", published

in the SNEA Impact, Vol. 13, No. 1, August 1980, the following conclusions are stated:

In addition to improvements in discipline, eight other generalizations about the results of smaller classes can be made:

- teachers use a wider variety of instructional strategies and are more effective,
- students have the benefit of more individualized instruction,
- students engage in more creative thinking processes,
- they learn how to function more effectively as members or leaders of groups of varying sizes and purposes,
- students develop better human relations,
- students learn basic skills better,
- teacher attitudes and morale are more positive, and
- student attitudes and perceptions are more positive.

The article further states that:

- Students achieve more in smaller classes, primarily because teachers have more opportunities to use appropriate instructional techniques and a greater variety of materials,
- Discipline problems decrease with smaller classes,
- When classes are large, teachers spend more time on discipline since students are prone to disrupt class when the teacher can't help them in time,
- The quality of classroom environment improves with small classes because teachers have more time to help all students,

- Students have more interest in learning and are less apathetic, less restless, and less frustrated,
- Students have higher self-esteem and are more satisfied with school when they are in small classes even if only for part of the day, and
- Teachers like their students better, have more time to plan and diversify instruction, and are more satisfied with their own performance when classes are small.

A central theme which runs through the literature concerning class size reduction is the conclusion that there are no automatic values accruing to academic achievement when student-faculty ratios are reduced unless appropriate learning styles and effective teaching styles are utilized. It is evident that no single class size is best for all levels of education and all subjects. When considering the best class size, a number of factors must be considered, such as subject taught and grade level. The literature indicates there is need for additional study on class size related to the myriad variables which affect the best class size, particularly studies conducted over a long period of time.

BIBLIOGRAPHY

Cacha, Frances B., "The Class Size and Achievement Controversy," Contemporary Education, Vol. 54, No. 1, Fall, 1982.

Cannon, Gwendolyn McConkie, "Kindergarten Class Size," Childhood Education, Vol. 43, No. 1, September, 1966.

"Class Size/Achievement Issue: New Evidence and a Research Plan," Phi Delta Kappan, March, 1979.

"Class Size and Learning: New Interpretation of the Research Literature," Today's Education, April, 1979.

"Class Size: A Summary of Research," Education Digest, December, 1978.

"Class Size and Pupil Achievement," High School Journal, Vol. 62, October, 1978.

"Class Size in Elementary Schools," NEA Research Bulletin, Vol. 40, No. 4, December, 1965.

"Class Size in Large Systems," NEA Research Bulletin, Vol. 45, No. 3, October, 1967.

"Class Size Research," Man, Society, and Technology, March 1979.

Cohen, Dorothy H., "Dependency and Class Size," Childhood Education, Vol. 43, No. 1, September, 1966.

Doherty, James, "Pupil-Teacher Ratio in Head Start Centers," Childhood Education, Vol. 43, No. 1, September, 1966.

Educational Research Service, "Class Size Research: A Critique of Recent Meta-Analysis," The Phi Delta Kappan, December, 1980.

Glass, Gene V. and Mary Lee Smith, Meta Analysis of Research on the Relationship of Class Size and Achievement, Far West Laboratory for Educational Research and Development at San Francisco, September, 1978.

Haberman, Martin, and Richard G. Larson, "Would Cutting Class Size Change Instruction?", The National Elementary Principal, Vol. XLVII, No. 4, February, 1968.

"Job Satisfaction and Teacher Characteristics," Peninsula Study Council, Stanford University, February, 1965.

Johnson, Mauritz and Eldon Scriven, "Class Size and Achievement Gains in Seventh- and Eighth-Grade English and Mathematics," The School Review, Vol. 75, No. 3 Autumn, 1967.

Keliher, Alice V., "Effective Learning and Teacher-Pupil Ratio," Childhood Education, Vol. 43, No. 1, September, 1966.

Lind, C. George, "Statistic of the Month: Pupil Teacher Ratios," Childhood Education, Vol. 43, No. 3, November, 1967.

"Lower Class Size Linked to Quality Schooling," SNEA Impact, Vol. 13, No. 1, August, 1980.

McKenna, Bernard H., "Patterns of Staff Deployment Related to School Quality," IAR Research Bulletin, Vol. 1, No. 3, April, 1961.

Menniti, Daniel J., "A Study of the Relationship Between Class Size and Pupil Achievement in the Catholic Elementary School," Dissertation Abstracts, XXV, 1965.

"Numerical Staffing Adequacy in Connecticut Schools," Connecticut School Development Council, Inc., Research Bulletin No. 16, October, 1965.

"Pupil-Staff Ratios, 1966-67," NEA Research Bulletin, Vol. 46, No. 1, March, 1968.

"Questions that Haunts Teachers," Instructor, October, 1978.

"Recommended Staffing Ratios--50 to 1,000--Seem Inadequate," Nation's Schools, Vol. 80, No. 6, December, 1967.

"Reports on Class Size," Childhood Education, Vol. 43, No. 1, September, 1966.

"Staffing Schools in the Twin Cities Metropolitan Area," A Survey of Staffing Levels in Schools Associated with the Educational Research and Development Council, 1967-68.

"Summary of Research on Class Size," Educational Research Service, Inc., Education Digest, December, 1978.

"Teachers and Principals Agree on Best Class Size," NEA Research Bulletin, Vol. 39, No. 4, December, 1961.

Williams, Clarence Murray, "An Exploratory Investigation of the Effects of Class Size and Scheduling Related to Achievement and Motivational Outcomes," Dissertation Abstracts, XXIV, 1964.

"Yes, The Smaller the Better," Times Education Supplement, September 8, 1978.